

COMPUTER IMAGE
CORPORATION

Case study: A look at video

By Birger Anderson, producer-director, Computer Image

Most of the dazzling, electronic video effects seen on television commercials and broadcast promotional material today are the result of pioneering and development by Computer Image Corporation of Denver.

It all started back in the mid 1950s when Lee Harrison, III, started dreaming about combining art and electronic technology to allow artists and animators another medium with which to communicate—television. He began creating such a system after adding an engineering degree to his fine arts degree in 1959.

"We made an electronic beam behave like an artist's paint brush," Harrison said, inventor of ANIMAC, SCANIMATE and CAESAR computer animation systems and now president of Computer Image Corporation in Denver, CO. "With the breakthrough of being able to manipulate video signals with precise control over position, timing, color and intensity we helped change the look of television commercials and broadcast promotions during the 70's" Harrison stated.

Ten years of experimentation with computers, video and associated electronic controls resulted in over 19 patents in a field so new that the patent office had to set up a separate category under the heading of "Electronic Image Generation and Animation." The engineering of this new technology earned Comput-

er Image Corporation an Emmy in 1972.

The first machine designed during the development stages in the 1960s was called ANIMAC. This device was capable of 3-dimensional animation, but represented a greater complexity than required by the animation industry. It was a combination analog and digital system, with the analog portion controlling the video signals of the imagery and the digital handled the precise timing of all elements. The video produced animation was then recorded on B&W film and color added during laboratory processing.

The next breakthrough was the development of a surface characteristics camera, which was operational by late 1969. This was the forerunner of the SCANIMATE system and could be manipulated to distort a planar surface into the third dimension. The first commercial production was done on a prototype in 1970 at Denver.

Whereas ANIMAC generated its own images, the next generation system, SCANIMATE viewed a piece of B&W artwork in the form of high contrast line negative. By using scan conversion the system was able to directly effect the manipulation of the television raster. This system was an entirely different approach to most computer animation methods which use mostly digital technology. Using strictly digital technology to animate an existent or non-existent object re-

quires that the object has to be mathematically definable in order to program the computer to generate an image. This often is a time consuming and costly process but by using a strictly analog system such as SCANIMATE, the most simple form of art work can be transformed into complex, free flowing patterns or animates representing existing or non-existent objects without complex programming. The SCANIMATE system was a commercial success and a number of machines were built during the 1970s and are presently in use producing commercial animation at Computer Image Corporation, Denver; Image West in Hollywood; Dolphin Productions, New York City; and Far East Laboratories in Tokyo.

The third system to be developed at Computer Image Corporation is the CAESAR system, (Computer Animated Episodes Around Single Axis Rotation). It is capable of animating multiple characters in full color with lip sync over art or live backgrounds and you can see a finished scene the same day.

The procedure used to produce animation on Scanimate is similar in many ways to the one used with CAESAR. What differs is the way the operator controls the system and the type of animation attempted.

Inclusion of a digital computer in CAESAR makes its operation simpler, and enables precise timing and positioning of the animation as well

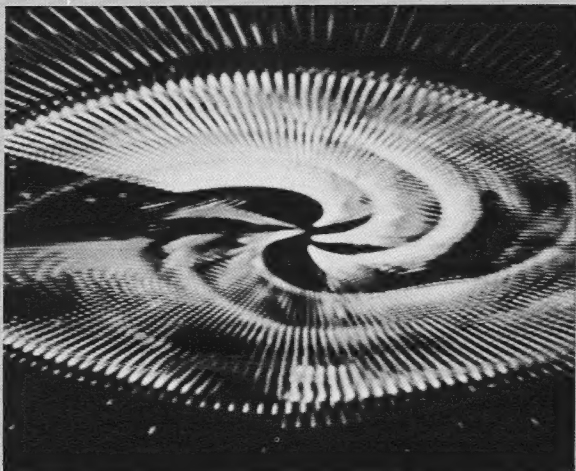
animation

as the production of long sequences. There is only one production CAESAR in operation and it is at the Denver facility. The experience gained while creating animation for a broad array of clients has given birth to a computer animation system of great power and versatility.

Although the emphasis was on developing and producing video electronic hardware during the early years production of software also was carried on. The first broadcast commercial for television was done in late 1969 for Home Federal and broadcast in the Chicago area. Since then thousands of television commercials and broadcast promotions have been done using the two systems or SCANIMATE and CAESAR together at the Denver facility.

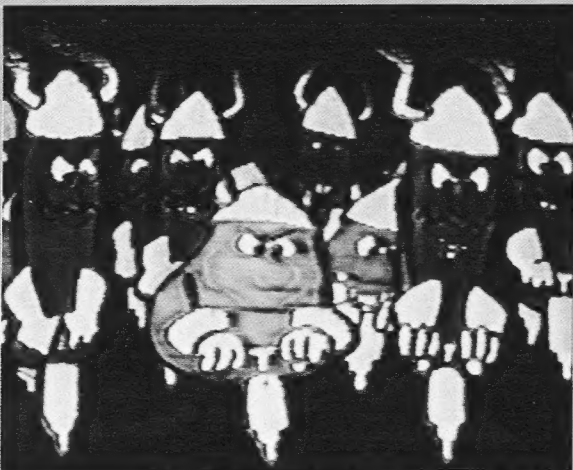
With the present emphasis on production, research and development is not being ignored. Both animation systems are continually updated and improved to give better quality and shorter production time.

A breakthrough was unveiled at the recent '79 NAB Convention in Dallas: full-color animation with images compression and rotation. The demonstration used a videotape of a KOLN-TV station promo for HEE HAW and *The Muppet Show* that combined live action from the shows and graphic animation. The composite color image was then compressed, sectioned and rotated (like venetian blinds) and then rotated again on the Z axis. This



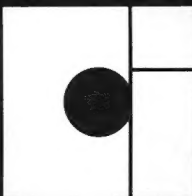
The SCANIMATE process allowed the simple form of artwork to be transformed into a complex, free flowing pattern. Pictured is an example of early SCANIMATE patterns.

The CAESAR system can animate multiple characters in full color with lip sync over art or live backgrounds. Pictured are animated characters from a public service announcement for the Department of Agriculture done on CAESAR.



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2475 W. Second Avenue
Denver, Colorado 80223
(303) 934-5801

Computer animation

latest breakthrough is part of the development of the System IV computer animation system that will be operational in the summer of this year. With each new generation of computer animation systems developed at Computer Image Corporation, the operation gets easier, requiring less training and special skills for operating.

According to Harold Abbott, vice president of production, "Full-color animation is but one of the recent innovations. We have also developed realistic shaded metallic effects with absolute control of reflections in every surface and we can do it just as easily in a glass or crystal effect."

Experiments in new ways to use electronic video animation are always being explored at Computer Image: animating weather forecasts in a simple, accurate visual style that everyone can understand; edi-

torial page type cartoons by leading political cartoonists have been animated quickly and successfully on the CAESAR system and reconstructing air crashes by adding visuals to the flight recorder data to aid in identifying causes of specific airplane crashes are but a few of the many continuing explorations for new uses of computer animation.

With the new "System IV" computer animation system starting off the decade of the 80s it is not unforeseeable that computerized electronic video animation could be quickly produced and the results or finished product could be delivered to the client or a commercial broadcaster via telephone lines in a matter of minutes. Dreams and ideas exist today that could make Computer Image Corporation the Polaroid of the computer animation industry, one step instant animation. □



The master switcher control room with the microprocessor in the foreground, syncs up signals from CAESAR and SCANIMATE and routes them to the VTR room.